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09/629,245	07/31/2000	Venkat Gopalakrishnan	C99-006	3874

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ARTHUR J. O'DEA
LEGAL DEPARTMENT
COGNEX CORPORATION
ONE VISION DRIVE
NATICK, MA 01760-2077

EXAMINER	
KASSA, YOSEF	
ART UNIT	**PAPER NUMBER**
2625	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/629,245	Applicant(s) GOPALAKRISHNAN ET AL.	
	Examiner YOSEF KASSA	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01/29/2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27 and 42-54* is/are rejected.

7)☒ Claim(s) *28 and 41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 July 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Arguments

1. Applicant's arguments, (page 4-8) filed on 01/07/2004, with respect to claims 1-54 under Nayar et al (U.S. Patent 4,912,336) and Chang et al (US Patent 6,137,896) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made of McAulay et al (U.S. Patent 5,663,799).

Drawings Objection

2. New corrected drawings are required in this application because Examiner can not clearly read the drawing. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 48 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. That is, the phrase "uv" cited in claim 48 is not described in the specification.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 48 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner did not understand the meaning of the term "uv" cited in claim 48. Please explain.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> A person shall be entitled to a patent unless –

Claims 1-4, 23, 24, 26, 27, 32-34, 39, 40 and 45-54 are rejected under 35 U.S.C. 102(b) as being anticipated by McAulay et al (5,663,799).

With regard to claim 1, McAulay et al discloses acquiring an intensity image of the object (see col. 8, lines 11-20); generating at least a portion of a two-dimensional frequency response of the intensity image (see col. 8, lines 32-41); representing the at least a portion of a two-dimensional frequency response within a frequency space (see

col. 8, lines 20-27), the at least a portion of a frequency response providing features arranged in a spatial-frequency pattern within the frequency space (see col. 8, lines 61-67); finding an orientation of the spatial-frequency pattern within the frequency space, thereby providing the orientation of the object (see col. 8, lines 55-60).

With regard to claim 2, McAulay et al discloses the intensity image is of a portion of the object (see col. 8, lines 32-41).

With regard to claim 3, McAulay et al discloses generating the at least a portion of a two-dimensional frequency response of the intensity image by applying frequency analysis tool to the intensity image (see Fig. 6B, 7B and 8B).

With regard to claim 4, McAulay et al discloses generating at least a portion of a magnitude of a two-dimensional discrete Fourier transform of the intensity image to provide the at least a portion of a two-dimensional frequency response (see col. 3, lines 56-67).

Claims 23, 32 and 39 are similarly analyzed as claim 1.

Claim 24 is similarly analyzed as claim 1.

Claims 26 and 33 are similarly analyzed as claim 3.

Claims 27, 34, 40 are similarly analyzed as claim 4.

Claims 45-54 are similarly analyzed as claim 1-4.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-22, 25, 29-31, 35-38 and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAulay et al (5,663,799), and further in view of Boles et al (4,549,184).

With regard to claim 5, while McAulay et al discloses two dimensional discrete Fourier transform, he does not explicitly call for two dimensional discrete fast Fourier transform. At the same field of endeavor Boles et al teaches this feature (see Fig. 9, items 52-55). At the time of the invention, it would have been obvious to a person of ordinary skill on the art to incorporate the teaching of Boles et al fast Fourier transform process into McAulay et al system. The motivation doing so is to provide accurately locating a targeted area of a moving object.

With regard to claim 6, McAulay et al discloses generating at least a portion of a two dimensional discrete cosine transform of the intensity image to provide the at least a portion of a two dimensional frequency response (see col. 3, lines 45-55).

Claim 7 is similarly analyzed as claim 6, that is, sin function is an inverse of a cosign function.

With regard to claim 8, McAulay et al discloses generating at least a portion of a two dimensional z-transform of the intensity image to provide the at least portion of a two-dimensional frequency response (see col. 4, lines 39-50).

With regard to claim 9, McAulay et al discloses representing the at least a portion of a two-dimensional frequency response as a logarithmically, i.e., inverse of

exponential function, scaled frequency response within the frequency space (see col. 4, lines 10-22).

With regard to claim 10, McAulay et al scaling the at least a portion of a two-dimensional frequency response using a scaling function so as to enhance high frequency responses within the at least a portion of the two-dimensional frequency response to provide a scaled frequency response (see Figs. 6B, 7B and 8B); and mapping the scaled response by gray scale on the frequency image (see col. 8, lines 35-43).

With regard to claim 11, McAulay et al discloses applying an angle finding means to the frequency space to provide an angle of the spatial-frequency pattern (see col. 4, lines 31-37).

With regard to claim 12, McAulay et al discloses identifying the spatial-frequency pattern within the frequency space (see Figs. 6b, 7B and 8B); and finding the orientation of the spatial-frequency pattern (see col. 8, lines 55-60).

With regard to claim 13, McAulay et al discloses finding the orientation of the plurality of spatial-frequency patterns (see col. 8, lines 55-60).

With regard to claim 14, McAulay et al discloses identifying one dominant spatial-frequency pattern from among the plurality of spatial-frequency patterns; and finding the orientation of the dominant spatial-frequency pattern (see Figs. 6B, 7B and 8B).

Claim 15 is similarly analyzed as claim 14.

With regard to claim 16, McAulay et al discloses the orientation of the object is at a constant offset from the orientation of the spatial-frequency pattern (see Figs. 3C, 4C and 5C).

Claim 17 is similarly analyzed as claim 16.

With regard to claim 18, McAulay et al discloses the orientation of the object is defined by an orientation angle of an object feature on the object (see col. 3, lines 42-50).

With regard to claim 19, McAulay et al discloses the spatial frequency pattern includes a line, the line having a line angle, and wherein the orientation of the object is an object angle, the object angle having a constant offset form the line angle (see Figs. 3C, 4C and 5C).

With regard to claim 20, McAulay et al discloses the object is a leaded object having leads, and wherein the orientation of the leaded object is defined by an orientation angle of one of the leads (see Figs. 3C, 4C and 5C).

With regard to claim 21, McAulay et al discloses the object angle substantially equals an orientation angle of a surface mount object from an axis of the intensity image (see col. 8, lines 11-20).

With regard to claim 22, McAulay et al discloses inputting the orientation of the object into a subsequent image processing algorithm (see col. 4, lines 50-61).

Claim 25 and 35 are similarly analyzed as claim 10.

Claims 29, 36 and 42 are similarly analyzed as claim 16.

Claims 30, 37 and 43 are similarly analyzed as claim 18.

Claims 31, 38 and 44 are similarly analyzed as claim 19.

Allowable Subject Matter

7. Claims 28 and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Prior Art Cited

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. (6,067,379) to Silver discloses method and apparatus for locating patterns on an optical image.

US Patent No. (5,440,391) to Burns et al discloses method and device for determining a position of at least one lead of an electronic component.

US Patent No. (5,257,714) to Beers et al discloses method and apparatus for electronic component lead inspection.

US Patent No. (4,978,224) to Kishimoto et al discloses method and apparatus for inspection mounting of chip components.

US Patent No. (4,791,586) to Maeda et al discloses method of and apparatus...

US Patent No. (4,164,788) to Jain discloses super resolution imaging system

US Patent No. (4,700,236) to Abe discloses image processing apparatus with improved gamma correction.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSEF KASSA whose telephone number is (703) 306-5918. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BHAVESH MEHTA can be reached on (703) 308-5246. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communication and (703) 872-9306 for after Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (703) 306-5631. The group receptionist number for TC 2600 is (703) 305-4700.

PATENT EXAMINER

Yosef Kassa

04/12/04.

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600